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| 09/746,045 | 12/22/2000 | Antonio J. Colmenarez | US 000403 | 9048 |

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| EXAMINER |
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SHAPIRO, LEONID

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| ART UNIT | PAPER NUMBER |
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2677

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 09/746,045 | Applicant(s) COLMENAREZ ET AL. | |
| | Examiner Leonid Shapiro | Art Unit 2673 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claim 1-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Girod (US Patent No. 6,677,987 B1).

As to claim 1, Girod teaches a system, comprising:

at least one light source in a movable hand-held device (See Fig. 1, items 110, 112, Col. 3, Lines 20-33), the movable hand-held device being capable of sending control signals to a remotely controllable device (See Figs. 1-2, , items 102, 122, 202, 208, Col. 3, Lines 42-44 and Col. 4, Lines 30-46);

at least one light detector that detects light from light source (See Fig. 1, item 108, Col. 3, Lines 21-27); and

a control unit (in the reference is equivalent to remote control system) that receives image data from at least one light detector (See Fig. 2, item 206, Col. 4, Lines 30-40);

wherein the control unit (in the reference is equivalent to remote control system) detects position of the hand-held device (See Fig. 2, item 206, Col. 4, Lines 30-40) in at least two-dimensions from the image data from the at least one light detector

Art Unit: 2673

(See Fig. 1, items 110, 104, Col. 3, Lines 44-48) and translates the position to control a feature on a display (See Fig. 1, items 102, 122, Col. 3, Lines 42-44).

As to claim 2, Girod teaches at least one light detector is a digital camera (See Fig. 2, item 204, in description see Col. 4, Lines 51-56).

As to claim 3, Girod teaches digital camera captures a sequence of digital images that include the light emitted by the hand-held device (See Fig. 2, item 206, Col. 5, Lines 3-6) , sequence of digital images transmitted to the control unit (See Figs. 4-5, item 420, from Col. 5, Line 66 to Col. 6, Line 15).

As to claim 4, Girod teaches the control unit comprises an image detection algorithm that detects the image of the light of the hand-held device in the sequence of images transmitted from the digital camera (See Fig. 6, items 602-620, Col. 7, Lines 23-54).

As to claim 5, Girod teaches the control unit maps a position of the detected hand-held device in the images to a display space for the display (See Fig. 1, item 12, Col. 3, Lines 43-45).

As to claim 6, Girod teaches the mapped position in the display space controls the movement of a feature in the display space (See Fig. 1, item 12, Col. 3, Lines 43-45).

As to claim 7, Girod teaches the feature in the display space is a cursor (See Fig. 1, item 12, Col. 3, Lines 43-45).

(US Patent No. 6,677,987 B1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Girod in view of Lin (US Patent No. 6,346,933 B1).

Girod does not show the captured images processed by the control unit for the purpose of teleconferencing, image transmission, and image recognition.

Lin teaches the captured images processed by the control unit for the purpose of teleconferencing (presentation), image transmission, and image recognition (See Col. 2, lines 30-34).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate teaching of Lin into Girod system in order to provide an interactive presentation control system (See Col. 2, Lines 30-34 in the Lin reference).

3. Claim 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Girod as aforementioned in claim 1 in view of Kim. et al. (US Patent No. 6,424,335 B1).

Girod does not show at least one light source is an LED.

Kim et al. teaches LED as light source See Fig. 1, item 100, in description See Col. 8, Lines 44-58).

It would have been obvious to one of ordinary skill in the art at the time of invention to use LED as light source as shown by Kim et al. in the Girod apparatus in order to achieve wireless input device which is energy efficient, consistent with operating the input device an extended distance from the computer (See Coll. 3, Line 66 to Col. 4, Line 2 in the Kim et al reference).

4. Claims 11-16 rejected under 35 U.S.C. 103(a) as being unpatentable over Girod as aforementioned in claim 1 in view of Fitts (US Patent No. 5,175,601).

As to claims 11-12, Girod does not show two digital cameras each capture a sequence of digital images that include the light emitted by the hand-held device, transmitted by each camera to the control unit.

Fitts teaches two cameras with digitizers and processing of digitized images (See Fig. 1, items 2-3, 13,15, in description See Col. 7, Lines 45-68).

It would have been obvious to one of ordinary skill in the art at the time of invention to use two cameras as shown by Fitts in the Girod apparatus to allow two digital cameras each capture a sequence of digital images that include the light emitted by the hand-held device, transmitted by each camera to the control unit in order to permit on line interaction (See Coll. 6, Line 45-46 in the Fitts reference).

As to claim 13, Girod does not show two digital cameras.

Fitts teaches two cameras with digitizers and processing of digitized images (See Fig. 1, items 2-3, 13,15, in description See Col. 7, Lines 45-68).

It would have been obvious to one of ordinary skill in the art at the time of invention to use two cameras as shown by Fitts in the Girod apparatus to develop an image detection algorithm that detects the image of the light of the hand-held device in each sequence of images transmitted from two digital cameras in order to permit on line interaction (See Coll. 6, Line 45-46 in the Fitts reference).

As to claim 14, Girod do not show the control unit with depth detection algorithm that uses the position of the light in the images received from each of the two cameras to determine a depth parameter from a change in a depth position of the hand-held device.

Fitts teaches two cameras with digitizers and processing of digitized images (See Fig. 1, items 2-3, 13,15, in description See Col. 7, Lines 45-68).

It would have been obvious to one of ordinary skill in the art at the time of invention to use two cameras as shown by Fitts in the Girod apparatus to develop depth detection algorithm that uses the position of the light in the images received from each of the two cameras to determine a depth parameter from a change in a depth position of the hand-held device cameras in order to permit on line interaction (See Coll. 6, Line 45-46 in the Fitts reference).

As to claims 15-16, Girod does not show the control unit maps a position of detected hand-held device in at least one of the images from one of the cameras and depth parameter to a 3D rendering in a display space and mapped position controls the movement of a feature in 3D rendering in the display space.

Fitts teaches to use identifiable points on 3-D surface and measuring X-Y-Z coordinates of these points based on knowledge of how two cameras are referenced to each other (See Fig. 1, items 2-3, 12, in description See Col. 3, Lines 33-54).

It would have been obvious to one of ordinary skill in the art at the time of invention to use two cameras as shown by Fitts in the Girod apparatus to map a position of detected hand-held device in at least one of the images from one of the cameras and depth parameter to a 3D rendering in a display space and mapped position controls the movement of a feature in 3D rendering in the display space in order to permit on line interaction (See Coll. 6, Line 45-46 in the Fitts reference).

5. Claims 17-21 rejected under 35 U.S.C. 103(a) as being unpatentable Girod as aforementioned in claim 1 in view of Arita et al. (US Patent No. 6,188,388 B1).

As to claims 17-18, Girod do not show two light sources in one hand-held unit and the digital camera captures a sequence of digital images that includes the light from the two light sources of the hand-held, the sequence of images transmitted to the control unit.

Arita et al. teaches two light sources in one hand-held unit (See Fig. 1, 9-10, items Pb, Kh, Ki, in description See Col.12, Lines 11-25).

It would have been obvious to one of ordinary skill in the art at the time of invention to use two light sources as shown by Arita et al. in Girod apparatus to allow the digital camera captures a sequence of digital images that includes the light from the

Art Unit: 2673

two light sources of the hand-held, the sequence of images transmitted to the control unit in order to improve precision (See Coll. 4, Line 5-8 in the Arita et al. reference).

As to claim 19, Girod does not show image detection algorithm that detects the image of the two light sources of the hand-held unit in the sequence of images transmitted from the digital camera.

Arita et al. teaches two light sources in one hand-held unit (See Fig. 1, 9-10, items Pb, Kh, Ki, in description See Col.12, Lines 11-25).

It would have been obvious to one of ordinary skill in the art at the time of invention to use two light sources as shown by Arita et al. in the Girod apparatus to allow an image detection algorithm that detects the image of the two light sources in the sequence of images transmitted from the digital camera in order to improve precision (See Coll. 4, Line 5-8 in the Arita et al. reference).

As to claims 20-21, Girod does not show and detected angular aspect of the hand-held device from the images of the two light sources does not maps angular aspect to a display space.

Arita et al. teaches two light sources in one hand-held unit (See Fig. 1, 9-10, items Pb, Kh, Ki, in description See Col.12, Lines 11-25).

It would have been obvious to one of ordinary skill in the art at the time of invention to use two light sources as shown by Arita et al. in the Lin and Koike et al. apparatus to allow show and detected angular aspect of the hand-held device from the images of the two light sources does not maps angular aspect to a display space in order to improve precision (See Coll. 4, Line 5-8 in the Arita et al. reference).

6. Claim 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Girod as aforementioned in claim 1 in view of Fitts.

Girod does not show light source emits visible light.

Fitts teaches visible light as light source (See Fig. 1, item 8, in description See Col. 8, Lines 33-35).

It would have been obvious to one of ordinary skill in the art at the time of invention to use visible light source as shown by Fitts in the Girod apparatus.

7. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over by Rice et al. (US Patent 5,973,672) in view of Girod.

Rice et al. teaches a system comprising:

two or more movable hand-held devices (See Fig. 1, item 15), each hand-held device with at least one light source at least one of the two or more movable hand-held device being capable of sending control signals to a remotely controllable device (See Fig. 1, items 15,25, in description See from Col. 1, Line 61 to Col. 2, Line 54),

at least one light detector detecting light from the at least one light source of each of the two or more hand-held devices (See Fig. 1, item 18, in description See Col. 1, Line 61 to Col. 2, Line 26),

a control unit that receives image data from the at least one light detector (See Fig. 1, items 19-23, in description See Col. 1, Line 61 to Col. 2, Line 26),

wherein the control unit detects wherein the control unit detects position of the light spot on a screen of the two or more movable hand-held devices in at least two dimensions from the image data from the at least one light detector and translates the positions for each of the two or more movable hand-held devices to separately control two or more respective features on a display (See Fig. 1, items 19-23, in description See Col. 1, Line 61 to Col. 2, Line 26).

Rice et al. does not teach the control unit detects position of the hand-held device in at least two-dimensions from the image data from at least one light detector and translates the position to control a feature on a display.

Girod teaches wherein the control unit (in the reference is equivalent to remote control system) detects position of the hand-held device (See Fig. 2, item 206, Col. 4, Lines 30-40) in at least two-dimensions from the image data from the at least one light detector (See Fig. 1, items 110, 104, Col. 3, Lines 44-48) and translates the position to control a feature on a display (See Fig. 1, items 102, 122, Col. 3, Lines 42-44).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate teaching of Girod into the Rice et al. apparatus in order to control computer based applications (See Col. 1, Lines 43-45 in the Girod reference).

8. Claims 24-26 rejected under 35 U.S.C. 103(a) as being unpatentable over Rice et al. and Girod as aforementioned in claim 23 in view Kim et al.

Rice et al. and Girod do not show the at least one light source of the two or more hand-held devices each turn on and off at a flashing frequency and emit light at a flashing wavelength with different frequencies.

Kim et al. teaches digital pulse format suitable for infrared transmission and detection as well known (see Fig. 2C, item 180, in description See Col. 8, Lines 44-58).

It would have been obvious to one of ordinary skill in the art at the time of invention to use pulsing sources as shown by Kim et al. in the Rice et al. and Girod apparatus at a flashing wavelength with different frequencies in order to allow input device is energy efficient (See Coll. 3, Line 66-67 in the Kim et al. reference).

9. Claim 27 rejected under 35 U.S.C. 103(a) as being unpatentable over Rice et al., Kim et al. and Girod as aforementioned in claim 26 in view of Fitts.

Rice et al., Kim et al. and Girod do not show light source emits visible light.

Fitts teaches visible light as light source (See Fig. 1, item 8, in description See Col. 8, Lines 33-35).

It would have been obvious to one of ordinary skill in the art at the time of invention to use visible light source as shown by Fitts in the Rice et al., Kim et al. and Girod apparatus.

10. Claim 28 rejected under 35 U.S.C. 103(a) as being unpatentable over Girod in view of Bowling (US Patent N0.5,746,261).

Girod teaches a system, comprising:

at least one light source in a movable hand-held device (See Fig. 1, items 110, 112, Col. 3, Lines 20-33), the movable hand-held device being capable of sending control signals to a remotely controllable device (See Figs. 1-2, , items 102, 122, 202, 208, Col. 3, Lines 42-44 and Col. 4, Lines 30-46);

at least one light detector that detects light from light source (See Fig. 1, item 108, Col. 3, Lines 21-27); and

a control unit (in the reference is equivalent to remote control system) that receives image data from at least one light detector (See Fig. 2, item 206, Col. 4, Lines 30-40);

wherein the control unit (in the reference is equivalent to remote control system) detects position of the hand-held device (See Fig. 2, item 206, Col. 4, Lines 30-40) in at least two-dimensions from the image data from the at least one light detector (See Fig. 1, items 110, 104, Col. 3, Lines 44-48) and translates the position to control a feature on a display (See Fig. 1, items 102, 122, Col. 3, Lines 42-44).

Girod does not disclose the control unit detects the position of the hand-held device relative to the position of a user carrying the hand-held device.

Bowling teaches the control unit detects the position of the hand-held device relative to the position of a user carrying the hand-held device (See from Col. 14, Line 65 to Col. 15, Line 4).

It would have been obvious to one of ordinary skill in the art at the time of invention to use position of the user as shown by Bowling in Girod system in order to improve remote control (See Col. 2, Lines 8-9 in the Bowling reference).

11. Claim 29 rejected under 35 U.S.C. 103(a) as being unpatentable over Girod in view of McTernan et al. (Pub. No.: US 2001/0056477 A1).

Girod teaches a system, comprising:

at least one light source in a movable hand-held device (See Fig. 1, items 110, 112, Col. 3, Lines 20-33), the movable hand-held device being capable of sending control signals to a remotely controllable device (See Figs. 1-2, , items 102, 122, 202, 208, Col. 3, Lines 42-44 and Col. 4, Lines 30-46);

at least on light detector that detects light from light source (See Fig. 1, item 108, Col. 3, Lines 21-27); and

a control unit (in the reference is equivalent to remote control system) that receives image data from at least one light detector (See Fig. 2, item 206, Col. 4, Lines 30-40);

wherein the control unit (in the reference is equivalent to remote control system) detects position of the hand-held device (See Fig. 2, item 206, Col. 4, Lines 30-40) in at least two-dimensions from the image data from the at least one light detector (See Fig. 1, items 110, 104, Col. 3, Lines 44-48) and translates the position to control a feature on a display (See Fig. 1, items 102, 122, Col. 3, Lines 42-44).

Girod does not disclose three dimensions.

McTernan et al. teaches 3Dspace with use of two cameras (See Fig. 3, items 56, 58, page 3, paragraph 0040).

It would have been obvious to one of ordinary skill in the art at the time of invention to use 3D space as shown by McTernan et al. in Girod system in order to track marker from multiple location (See page 2, paragraph 0021 in the McTernan et al. reference).

Response to Argument

12. Applicant's arguments filed on 02.11.05 have been fully considered but they are not persuasive.

On page 10, second paragraph of Remarks Applicant's stated that Girod disclosed a digital video decoder which is not "control unit that detects position of the hand held device". However in Col. 4, Lines 30-31, Girod stated that Fig. 2, is a functional block diagram of an example control system and positionable light source 202 emits light which is captured by camera. Therefore, Girod disclosed a control unit that detects the position of the hand-held device (See Col. 1, Lines 43-45).

On page 10, 4th paragraph of Remarks Applicant's stated that Girod does not disclose digital camera, but camera that convert an image to digital video images. However, according to the definition of the digital camera in Description (See page 7, Lines 13-17), where Applicant's stated that digital camera need a presence of the 2D array and A/D converter. Therefore, those of ordinary skill in the art readily recognize that Girod camera is a digital camera, since it does not require scanning and have the A/D converter.

On page 15, second paragraph of Remarks Applicant's stated that Girod disclosed a digital video decoder which is not "control unit that detects position for each of the two or more movable hand-held devices". However in Col. 4, Lines 30-31, Girod stated that Fig. 2, is a functional block diagram of an example control system and positionalble light source 202 emits light which is captured by camera. Therefore, Girod disclosed a control unit that detects the position of the hand-held device (See Col. 1, Lines 43-45).

Telephone inquire

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 571-272-7683. The examiner can normally be reached on 8 a.m. to 5 p.m..

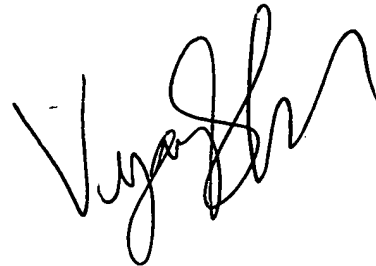
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/746,045
Art Unit: 2673

Page 16

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06.22.05

A handwritten signature in black ink, appearing to read 'Vijay Shankar', with a stylized, cursive script.

**VIJAY SHANKAR
PRIMARY EXAMINER**